

SEOUENCE LISTING

<110> Mahajan, Muktar A. Samuels, Herbert H.

<120> NIF-1 IS A NOVEL CO-TRANSDUCER THAT INTERACTS WITH AND REGULATES THE ACTIVITY OF THE NUCLEAR HORMONE RECEPTOR CO-ACTIVATOR, NRC

<130> 57953/1151

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<150> 60/405,752

<151> 2002-08-23

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<170> PatentIn Ver. 2.1

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35 40 45

Ala Val Ser Ala Asp Ser Ser Asp Ala Ala Ala Pro Gly Gln Ala 50 55 60

Glu Ala Asp Asp Ser Gly Val Gly Gln Ser Ser Asp Arg Gly Ser Arg 65 70 75 80

Ser Gln Glu Glu Val Ser Glu Ser Ser Ser Ser Ala Asp Pro Leu Pro 85 90 95

Asn Ser Tyr Leu Pro Asp Ser Ser Ser Val Ser His Gly Pro Val Ala 100 105 110

Gly Val Thr Gly Gly Pro Pro Ala Leu Val His Ser Ser Ala Leu Pro 115 120 125

Asp Pro Asn Met Leu Val Ser Asp Cys Thr Ala Ser Ser Ser Asp Leu 130 135 140

Gly Ser Ala Ile Asp Lys Ile Ile Glu Ser Thr Ile Gly Pro Asp Leu 145 150 155 160

Ile Gln Asn Cys Ile Thr Val Thr Ser Ala Glu Asp Gly Gly Ala Glu
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Thr Thr Arg Tyr Leu Ile Leu Gln Gly Pro Asp Asp Gly Ala Pro Met 180 185 190

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Gln 225	Gly	Gly	Pro	Ser	Ser 230	Pro	Val	Gln	Leu	Pro 235	Pro	Ala	Ser	Gly	Ala 240
Glu	Glu	Pro	Asp	Leu 245	Gln	Ser	Leu	Glu	Ala 250	Met	Met	Glu	Val	Val 255	Val
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- Ser Phe Pro Ser Pro Asp Ala Leu Ala Ser Gly Ala Lys Trp Pro Leu 965 970 975
- Leu Gln Cys Gly Gly Leu Pro Arg Asp Gly Pro Glu Pro Pro Ser Pro 980 985 990
- Ala Lys Thr His Cys Val Gly Asp Ser Gln Ser Ser Ala Ser Ser Pro 995 1000 1005
- Pro Ala Thr Ser Lys Ala Leu Gly Leu Ala Val Pro Pro Ser Pro Pro 1010 1015 1020
- Ser Ala Ala Thr Ala Ala Ser Lys Lys Phe Ser Cys Lys Ile Cys Ala 1025 1030 1035 1040
- Glu Ala Phe Pro Gly Arg Ala Glu Met Glu Ser His Lys Arg Ala His 1045 1050 1055
- Ala Gly Pro Gly Ala Phe Lys Cys Pro Asp Cys Pro Phe Ser Ala Arg 1060 1065 1070
- Gln Trp Pro Glu Val Arg Ala His Met Ala Gln His Ser Ser Leu Arg 1075 1080 1085
- Pro His Gln Cys Ser Gln Cys Ser Phe Ala Ser Lys Asn Lys Lys Asp 1090 1095 1100
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- Gly Val Leu Gly Pro Glu Arg Leu Gln Gln Ala Leu Ser Gln Glu His 1185 1190 1195 1200
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Tyr Ile Gl
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n Thr Val Gl
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Val Thr Ser Asp Asn Gln Val Gln Tyr Ile Ile Ser Gln Asp Gly Val 1235 \cdot 1240 1245

Gln His Leu Leu Pro Gln Glu Tyr Val Val Pro Glu Gly His His 1250 1255 1260

Ile Gln Val Gln Glu Gly Gln Ile Thr His Ile Gln Tyr Glu Gln Gly 1265 1270 1275 1280

Ala Pro Phe Leu Gln Glu Ser Gln Ile Gln Tyr Val Pro Val Ser Pro 1285 1290 1295

Gly Gln Gln Leu Val Thr Gln Ala Gln Leu Glu Ala Ala Ala His Ser 1300 1305 1310

Ala Val Thr Ala Val Ala Asp Ala Ala Met Ala Gln Ala Gln Gly Leu 1315 1320 1325

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Arg Ser Gln Glu Glu Val Ser Glu Ser Ser Ser Ala Asp Pro Leu

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- Pro Asp Pro Asn Met Leu Val Ser Asp Cys Thr Ala Ser Ser Ser Asp 115 120 125
- Leu Gly Ser Ala Ile Asp Lys Ile Ile Glu Ser Thr Ile Gly Pro Asp 130 135 140
- Leu Ile Gln Asn Cys Ile Thr Val Thr Ser Ala Glu Asp Gly Gly Ala 145 150 155 160
- Glu Thr Thr Arg Tyr Leu Ile Leu Gln Gly Pro Asp Asp Gly Ala Pro 165 170 175
- Met Thr Ser Pro Met Ser Ser Ser Thr Leu Ala His Ser Leu Ala Ala 180 185 190
- Ile Glu Ala Leu Ala Asp Gly Pro Thr Ser Thr Ser Thr Cys Leu Glu
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- Ala Gln Gly Gly Pro Ser Ser Pro Val Gln Leu Pro Pro Ala Ser Gly
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- Ala Glu Glu Pro Asp Leu Gln Ser Leu Glu Ala Met Met Glu Val Val 225 230 235 240
- Val Val Gln Gln Phe Lys Cys Lys Met Cys Gln Tyr Arg Ser Ser Thr 245 250 255
- Lys Ala Thr Leu Leu Arg His Met Arg Glu Arg His Phe Arg Pro Val 260 265 270
- Ala Ala Ala Ala Ala Ala Gly Lys Lys Gly Arg Leu Arg Lys Trp
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- Ser Thr Ser Thr Lys Ser Gln Glu Glu Glu Glu Glu Glu Glu Glu Asp 290 295 300
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- Ser Asp Tyr Asn Pro Ala Glu Asp Glu Pro Arg Gly Arg Gln Leu Arg

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580

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- Phe Cys Glu Phe Val Cys Glu Asp Lys Lys Ala Leu Leu Asn His Gln 625 630 635 640
- Leu Ser His Val Ser Asp Lys Pro Phe Lys Cys Ser Phe Cys Pro Tyr
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- Arg Thr Phe Arg Glu Asp Phe Leu Leu Ser His Val Ala Val Lys His 660 665 670
- Thr Gly Ala Lys Pro Phe Ala Cys Glu Tyr Cys His Phe Ser Thr Arg 675 680 685
- His Lys Lys Asn Leu Arg Leu His Val Arg Cys Arg His Ala Ser Ser 690 695 700
- Phe Glu Glu Trp Gly Arg Arg His Pro Glu Glu Pro Pro Ser Arg Arg 705 710 715 720
- Arg Pro Phe Phe Ser Leu Gln Gln Ile Glu Glu Leu Lys Gln Gln His
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- Ser Ala Ala Pro Gly Pro Pro Pro Ser Ser Pro Gly Pro Pro Glu Ile
 740 745 750
- Pro Pro Glu Ala Thr Thr Phe Gln Ser Ser Glu Ala Pro Ser Leu Leu
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- Cys Ser Asp Thr Leu Gly Gly Ala Thr Ile Ile Tyr Gln Gln Gly Ala 770 775 780
- Glu Glu Ser Thr Ala Met Ala Thr Gln Thr Ala Leu Asp Leu Leu 1985 790 795 800
- Asn Met Ser Ala Gln Arg Glu Leu Gly Gly Thr Ala Leu Gln Val Ala 805 810 815
- Val Val Lys Ser Glu Asp Val Glu Ala Gly Leu Ala Ser Pro Gly Gly 820 825 830
- Gln Pro Ser Pro Glu Gly Ala Thr Pro Gln Val Val Thr Leu His Val

835	840	845

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- Asp Leu Pro Gln Ile Thr Leu Ala Pro Gly Pro Phe Gly Gly Thr Gly
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- Gly Thr Pro Tyr Ser Glu Glu Pro Ala Gly Glu Ala Ala Gln Ala Val
- Val Val Ser Asp Thr Leu Lys Glu Ala Gly Thr His Tyr Ile Met Ala
- Thr Asp Gly Thr Gln Leu His His Ile Glu Leu Thr Ala Asp Gly Ser
- Ile Ser Phe Pro Ser Pro Asp Ala Leu Ala Ser Gly Ala Lys Trp Pro
- Leu Leu Gln Cys Gly Gly Leu Pro Arg Asp Gly Pro Glu Pro Pro Ser
- Pro Ala Lys Thr His Cys Val Gly Asp Ser Gln Ser Ser Ala Ser Ser
- Pro Pro Ala Thr Ser Lys Ala Leu Gly Leu Ala Val Pro Pro Ser Pro
- Pro Ser Ala Ala Thr Ala Ala Ser Lys Lys Phe Ser Cys Lys Ile Cys
- Ala Glu Ala Phe Pro Gly Arg Ala Glu Met Glu Ser His Lys Arg Ala
- His Ala Gly Pro Gly Ala Phe Lys Cys Pro Asp Cys Pro Phe Ser Ala
- Arg Gln Trp Pro Glu Val Arg Ala His Met Ala Gln His Ser Ser Leu
- Arg Pro His Gln Cys Ser Gln Cys Ser Phe Ala Ser Lys Asn Lys Lys
- Asp Leu Arg Arg His Met Leu Thr His Thr Lys Glu Lys Pro Phe Ala

1090

Cys His Leu Cys Gly Gln Arg Phe Asn Arg Asn Gly His Leu Lys Phe 1105 1110 1115 1120

- His Ile Gln Arg Leu His Ser Pro Asp Gly Arg Lys Ser Gly Thr Pro 1125 1130 1135
- Thr Ala Arg Ala Pro Thr Gln Thr Pro Thr Gln Thr Ile Ile Leu Asn 1140 1145 1150
- Ser Asp Asp Glu Thr Leu Ala Thr Leu His Thr Ala Leu Gln Ser Ser 1155 1160 1165
- His Gly Val Leu Gly Pro Glu Arg Leu Gln Gln Ala Leu Ser Gln Glu 1170 1175 1180
- Ala Tyr Ile Gln Glu Ile Thr Thr Ala Asp Gly Gln Thr Val Gln His
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- Leu Val Thr Ser Asp Asn Gln Val Gln Tyr Ile Ile Ser Gln Asp Gly
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- Val Gln His Leu Leu Pro Gln Glu Tyr Val Val Pro Glu Gly His 1235 1240 1245
- His Ile Gln Val Gln Glu Gly Gln Ile Thr His Ile Gln Tyr Glu Gln 1250 1255 1260
- Gly Ala Pro Phe Leu Gln Glu Ser Gln Ile Gln Tyr Val Pro Val Ser 1265 1270 1275 1280
- Pro Gly Gln Gln Leu Val Thr Gln Ala Gln Leu Glu Ala Ala Ala His 1285 1290 1295
- Ser Ala Val Thr Ala Val Ala Asp Ala Ala Met Ala Gln Ala Gln Gly
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- Leu Phe Gly Thr Asp Glu Thr Val Pro Glu His Ile Gln Gln Leu Gln 1315 1320 1325
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705	_				710	_	Glu			715		_		_	720
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Phe Pro Cys Pro Val Cys Gly Arg Val Tyr Pro Met Gln Lys Arg Leu 50 55 60

Thr Gln His Met Lys Thr His Ser Thr Glu Lys Pro His Met Cys Asp
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Lys Cys Gly Lys Ser Phe Lys Lys Arg Tyr Thr Phe Lys Met His Leu 85 90 95

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Ser His Val Ser Asp Lys Pro Phe Lys Cys Ser Phe Cys Pro Tyr Arg 130 135 140

Thr Phe Arg Glu Asp Phe Leu Leu Ser His Val Ala Val Lys His Thr 145 150 155 160

Gly Ala Lys Pro Phe Ala Cys Glu Tyr Cys His Phe Ser Thr Arg His Lys Lys Asn Leu Arg Leu His Val Arg Cys Arg His Ala Asn Ser Phe Glu Glu Trp Gly Arg Arg His Pro Glu Glu Pro Pro Ser Arg Arg Arg Pro Ile Phe Ser Leu Gln Gln Ile Glu Lys Leu Lys Gln Gln His Ser Ala Ala Pro Gly Pro Pro Leu Ser Ser Ala Gly Pro Glu Ala Pro Gln Glu Pro Ala Pro Phe Gln Ser Pro Glu Thr Pro Pro Leu Leu Cys Pro Asp Ala Leu Gly Gly Ala Thr Ile Ile Tyr Gln Gln Gly Ala Glu Glu Ser Thr Ala Met Ala Thr Gln Thr Ala Leu Asp Leu Leu Leu Asn Met Ser Ala Gln Arg Glu Leu Gly Ala Thr Ala Leu Gln Val Ala Val Val Lys Sér Glu Asp Val Glu Ala Glu Leu Thr Ser Thr Ala Arg Gln Pro Ser Ser Glu Asp Thr Thr Pro Arg Val Val Thr Leu His Val Ala Glu Ser Gly Ser Ser Val Ala Ala Glu Ser Gln Leu Gly Pro Ser Asp Leu Gln Gln Ile Ala Leu Pro Pro Gly Pro Phe Ser Gly Ala Ser Tyr Ser Val Ile Thr Ala Pro Pro Val Glu Gly Arg Ala Ser Ala Ser Gly Pro Pro Tyr Arg Glu Glu Pro Pro Gly Glu Ala Ala Gln Ala Val Val Asn Asp Thr Leu Lys Glu Ala Gly Thr His Tyr Ile Met Ala Ala Asp

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Thr Ala Asp Gly Gln Thr Val Gln His Leu Val Thr Ser Asp Asn Gln 700 695

Val Gln Tyr Ile Ile Ser Gln Asp Gly Val Gln His Leu Leu Pro Gln 705 710 715 720

Glu Tyr Val Val Pro Asp Gly His His Ile Gln Val Gln Glu Gly 725 730

Gln Ile Thr His Ile Gln Tyr Glu Gln Gly Thr Pro Phe Leu Gln Glu 750 740 745

Ser Gln Ile Gln Tyr Val Pro Val Ser Pro Ser Gln Gln Leu Val Thr 760 765 755

Gln Ala Gln Leu Glu Ala Ala Ala His Ser Ala Val Thr Val Ala Asp 775 780

Ala Ala Met Ala Gln Ala Gln Gly Leu Phe Gly Thr Glu Glu Ala Val 790 795

Pro Glu His Ile Gln Gln Leu Gln His Gln Gly Ile Glu Tyr Asp Val 805 810

Ile Thr Leu Ser Asp Asp 820

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<223> Description of Artificial Sequence: Peptide

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Leu Val Asn Leu Leu 1

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Ala Val Asn Ala Ala 1 5

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<223> Description of Artificial Sequence: Peptide

<400> 11

Leu Asp Leu Leu Leu

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<212> PRT

<213> Human

<400> 12

Cys Asp Lys Cys Gly Lys Ser Phe Lys Lys Arg Tyr Thr Phe Lys Met 1 5 . 10 . 15

His Leu Leu Thr His Cys Glu Phe Val Cys Glu Asp Lys Lys Ala Leu $20 \hspace{1cm} 25 \hspace{1cm} 30 \, .$

Leu Asn His Gln Leu Ser His Ala Thr Gln Thr Ala Leu Asp Leu Leu 35 40 45

Leu Asn Met Ser Ala Gln Arg Glu Leu Cys Lys Ile Cys Ala Glu Ala 50 55 60

Phe Pro Gly Arg Ala Glu Met Glu Ser His Lys Arg Ala His Cys His 65 70 75 80

Leu Cys Gly Gln Arg Phe Asn Arg Asn Gly His Leu Lys Phe His Ile 85 90 95

Gln Arg Leu His Leu Asn Ser Asp Glu Thr Leu Ala Thr Leu His
100 105 110

Thr Ala Leu Gln Ser Ser His Gly Val Leu 115 120

<210> 13

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<213> CHICK

<400> 13

Asp Tyr Val Thr Leu Gln Asp Leu His Ser His Val Tyr Arg Glu Ser 1 5 10 15

Arg Asn Gly Glu Ser Gln Glu Ser His Gln Ile Met Glu Asp Gln Gly 20 25 30

Gln Ala

<210> 14

<211> 11

<212> PRT

<213> Rat

<400> 14

Val Ser Ser Val Ile Glu Glu Glu Phe Asn Thr
1 5 10